

ABSTRACT

Techniques are provided for measuring chloride ion concentration in a medium. The techniques allow measurements to be made in dry or alkaline media, or both. For alkaline conditions, a sensor includes a pair of electrodes and a polymer film imprinted for uptake of chloride ions under alkaline conditions. The film is deposited to be in contact with at least one electrode and the medium. For dry conditions, a sensor includes a pair of electrodes and a conductive polymer film imprinted for uptake of chloride ions. The film is in contact with the pair of electrodes, and is positioned for contact with the medium. An electrical conductivity of the film depends on an amount of chloride ions taken up by the film. Some techniques allow chloride ion measurements over years at sensors embedded in concrete. Such measurements allow the determination of the progress of rebar corrosion in concrete infrastructure.